Electronic Version
Stylesheet Version v1.1.1

Claims

[c1] What is claimed is:

1.A direct-type backlight unit for flat panel liquid crystal display, comprising:

a plurality of lamps installed within a housing;

a reflection plate installed under the plurality of lamps in the housing; and

a diffusion film with a plurality of apertures thereon installed above the plurality of lamps for diffusing light generated by the plurality of lamps.

[c2] 2.The direct-type backlight unit of claim 1 wherein the plurality of lamps are a cold cathode fluorescent lamp (CCFL).

[c3] 3.The direct-type backlight unit of claim 1 wherein the diffusion film is made of materials having high thermal conductivity.

[c4] 4.The direct-type backlight unit of claim 3 wherein the diffusion film is made of metal and has a thickness of less than 0.5mm.

[c5] 5.The direct-type backlight unit of claim 1 further comprises a diffusion sheet located on the diffusion film.

[c6] 6.The direct-type backlight unit of claim 1 wherein at least one heat-dissipating piece is disposed at a periphery of the diffusion film.

[c7] 7.The direct-type backlight unit of claim 6 wherein the heat-dissipating piece is made of metal.

[c8] 8.The direct-type backlight unit of claim 6 further comprising a heat exchanging means connected with the heat-dissipating piece.

[c9] 9.The direct-type backlight unit of claim 8 wherein the heat exchanging means is a heat pipe.

[c10] 10.The direct-type backlight unit of claim 1 wherein the apertures on the diffusion film have different diameters/dimensions.

[c11] 11.The direct-type backlight unit of claim 10 wherein the diameter/dimension of the apertures directly above the lamps is smaller than the diameter/dimension of the apertures not directly above the lamps.

[c12] 12.The direct-type backlight unit of claim 1 wherein the diameters/dimensions of the apertures are the same.

[c13] 13.The direct-type backlight unit of claim 12 wherein the diffusion film has a highest aperture packing density

at an area directly over the lamps.

[c14] 14.The direct-type backlight unit of claim 1 wherein the apertures are circular, rectangular, or any other shape.

[c15] 15.The direct-type backlight unit of claim 1 wherein the diffusion film is a metal film and the apertures are columns and rows of through slots arranged on the metal film.